SECTION II:
THE SANCTUARY SETTING

Figure 6. *San Miguel Island (Glenn Allen)*

This section describes the Channel Islands National Marine Sanctuary setting in four parts:

- *Part II-A: The Physical Setting* describes the Sanctuary's geology, meteorology, oceanography, watersheds, bioregions and habitats;
- *Part II-B: The Biological Setting* describes marine plant and animal life;
- *Part II-C: The Human Setting* describes human activities occurring in and near the Sanctuary; and
- *Part II-D: The Operational Setting* the Sanctuary's administrative structure, infrastructure, intra and inter-agency relationships, tools for formalizing relationships, funding mechanisms, and enforcement and permitting procedures.

A description of the Sanctuary environment is also located in the FEIS (Vol. II, Section 3.0).

PART II-A: THE PHYSICAL SETTING

The Sanctuary boundary begins at the Mean High Water Line of and extends seaward to a distance of approximately six nmi from the following islands and offshore rocks: San Miguel Island, Santa Cruz Island, Santa Rosa Island, Anacapa Island, Santa Barbara Island, Richardson Rock, and Castle Rock (the Islands). The Sanctuary resides within the upper portion of the Southern California Bight (SCB), which is formed by a transition in the California coastline wherein the north-south trending coast begins to trend east to west. The SCB stretches from Point Conception in the north to Punta Eugenia (Mexico) in the south (Dailey *et al.* 1993). A detailed characterization of the physical and biological setting of the Sanctuary is found in CDFG (2002) and NCCOS (2005).

Geology

Geologic features usually consist of formational, depositional and volcanic rocks, unique landforms, tectonic features and fossils. In coastal and marine settings, sediments are also considered part of the geology.

The Channel Islands are all located within a unique, 300-mile long oceanographic region known as the "Continental Borderland" (Norris and Webb 1990). Unlike most wide continental shelves, which are gently sloping platforms interrupted by low banks and occasional canyons, the Continental Borderland is a region of basins and elevated ridges. Regions and basins in the Channel Islands region are shown in the bathymetric map in Figure 7. The Channel Islands are the ridge portions rising above sea level. The highest point in the Channel Islands is the 2,450 foot Picacho Diablo on Santa Cruz Island.

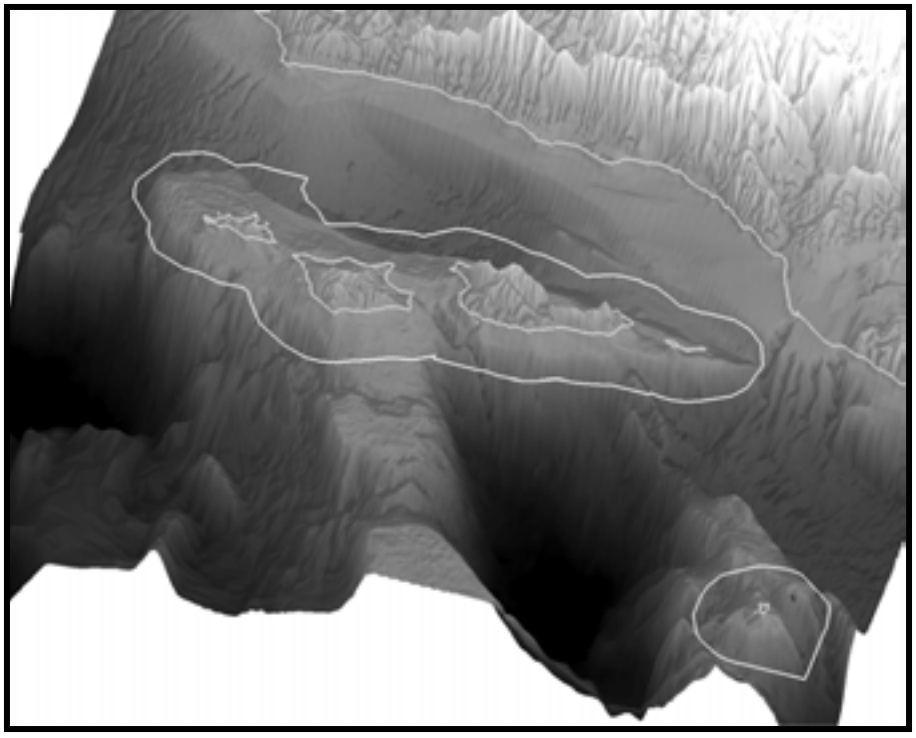

Figure 7. *Bathymetric map of the Channel Islands*

Lying parallel between the California coast and the Channel Islands is the 1,950-foot deep Santa Barbara Basin. Other regional basins range in depth from 1,650 to 8,250 feet. The seaward edge of the Continental Borderland (known as the Patton Escarpment) descends 13,200 feet to the deep ocean floor (Norris and Webb 1990).

Oil and Natural Gas

More than 20 oil fields and several natural gas fields lie beneath the Santa Barbara Channel. Most are close to the mainland and several are accessed from offshore oil and gas platforms (Norris and Webb 1990). There are more than 40 naturally occurring oil and gas seeps in the Santa Barbara Channel (Norris and Webb 1990). The rate of oil seepage from the South Ellwood anticline (located about 1.62 nautical miles offshore in the Santa Barbara Channel) is one of the highest in the world. The dissolved hydrocarbon plume extends several km down-current from the vents (Washburn *et al.* 1996).

Meteorology

The Channel Islands region has a Mediterranean climate characterized by mild winters (when most rainfall occurs) and warm, dry summers. The climate is dominated by a strong and persistent high-pressure system frequently off the Pacific coast (generally referred to as the "Pacific High"). The Pacific High shifts northward or southward in response to seasonal changes or the presence of cyclonic storms. In its usual position to the west of Santa Barbara County, the Pacific High produces an elevated temperature inversion. Coastal areas are characterized by early morning southeast winds, which generally shift northwest later in the day. Transport of cool, humid marine air onshore by these northwest winds produces frequent fog and low clouds near the coast, particularly during nighttime and morning hours in the late spring and early summer months.

The most important climatic and meteorological characteristics influencing air quality in the region are the relatively consistent temperature and the predominance of onshore winds, topography and solar irradiance.

Figure 8. *Forney's Cove, Santa Cruz Island (Adrian M. Wenner)*

Oceanography

Offshore circulation results from the interaction of large-scale ocean currents, local geography, and the unique basin and ridge topography of the ocean bottom in the Southern California Bight. The California Current is a major ocean current that moves through the Sanctuary region, staying largely to the west of the islands, but influencing the circulation patterns in the region. Year round, this current brings cold water from upwelling centers along the California coast.

At Point Conception, where the coastline turns east, the California Current moves farther offshore as it continues its southward flow. Near the U.S.- Mexican border the California Current turns east and then north, and flows back up along the coast bringing warm water into the Santa Barbara Channel. This directional shift creates a large eddy known as the Southern California Countercurrent or the Southern California Eddy (Hickey 2000a). At the eastern end of the Channel Islands, the Southern California Countercurrent separates into two parts. One part flows northwestward through the Santa Barbara Channel; the other part flows westward south of the Channel Islands. The California Current and Southern California Countercurrent are both strongest in the summer (Hickey 1993). During the spring, the countercurrent disappears and surface flow throughout the SCB tends to be southward (Hickey 1993). The timing, duration and intensity of upwelling events is driven by seasonal variations in wind direction and climatic variability associated with events such as El Nino. In general, upwelling period begins in

March, when westerly winds prevail, and continues until September, when the winds die down (California Coastal Commission 1987).

Upwelling (circulation patterns in which deep, cold, nutrient-laden water moves towards the surface) often occurs where these currents meet. Upwelling currents influence circulation in the Sanctuary region. These currents are the result of prevailing winds and the orientation of the coastline. Along the north-south oriented coast of California, winds blowing from the north move surface water westward, away from the coastline, and create upwelling currents that bring colder water to the surface.

Point Conception is the southernmost major upwelling center on the west coast of the United States, and marks a transition zone between cool surface waters to the north and warm waters to the south (Love *et al.* 1999). However, upwelled water from regions north of the SCB appears to enter the western end of the Santa Barbara Channel and move eastward along its southern boundary (Hickey 2000a). Between the islands and the mainland, these currents create a localized cyclonic gyre that can vary in intensity seasonally based on current and wind speed (Hendershot and Winant 1996, Harms and Winant 1998, Winant et al 2003). These varying conditions create alternate states of upwelling, where cool nutrient-rich water is brought from deeper areas to the photic zone at the surface, and relaxation, when upwelling ceases (Winant et al 2003). Regional upwelling is wind-driven and provides the nutrients and conditions for phytoplankton and zooplankton to thrive, with effects seen throughout the food chain.

Watersheds

A watershed is the area of land where all water under it or draining off of it goes into the same place. There are a number of watersheds located on the northern Channel Islands, contributing a small amount of fresh water into the Sanctuary. Most fresh water entering the Sanctuary region, however, comes from the streams and rivers along the mainland coast, such as the Santa Clara and Ventura which provide the majority of the freshwater and sediments into the Santa Barbara Channel. The Santa Ynez and Santa Maria rivers provide major drainages north of Point Conception. These major rivers have been shown to transport sediment plumes that reach the Sanctuary.

The regional coastal mainland also includes the San Antonio Creek watershed and 41 small coastal watersheds on the south side of the Santa Ynez Mountain Range. The creeks of these watersheds provide important nutrients to the marine environment (as well as pollution from agricultural and urban runoff).

Bioregions

Bioregions are distinct areas characterized by differences in the assemblages of species present. In the Channel Islands region, there are two distinct bioregions and a transition zone: 1) the cold water Oregonian Province; 2) the warm water Californian Province; and 3) a transition zone between the two. Point Conception is often identified as marking the general boundary between the two bioregions (NCCOS 2005). Changes in the ecology of the bioregions are influenced by hydrographic conditions in the Southern California Bight and ocean-climate variability.

The Oregonian Province is characterized by the cold waters of the California Current and encompasses San Miguel Island, Santa Rosa Island, and part of northern Santa Cruz Island. It extends northward along the coast of California, Oregon, and Washington. The Californian Province is characterized by warm water of the California Counter Current and extends south along the coast of California and Mexico. Species characteristic of the Californian Province occur around Anacapa Island and the east end of Santa Cruz Island. The transition between the two bioregions, which is characterized by mixed water from both bioregions, is dynamic, where persistent thermoclines may shift tens of miles in response to annual to inter-annual variability caused by events such as El Niño-Southern Oscillation (ENSO) (McGowan *et al*. 1998). The transition zone supports a unique assemblage of species from both bioregions and typically encompasses south Santa Rosa, south Santa Cruz, and Santa Barbara islands.

Habitats

There are a wide variety of marine habitats in the Sanctuary. Some of the key habitats are summarized here, while complete details and a comprehensive list of habitats are found in the FEIS (Vol. II, Section 3.0) and in CDFG (2002).

Kelp Forest Habitat

Giant kelp, a keystone species, forms extensive underwater beds on rocky substrates (except *M. angustifolia* which coast occurs on sand) at shallow subtidal depths (9.9 to 99 feet) throughout the Sanctuary region. These impressive, underwater forests are conspicuous features of the Sanctuary and important not only to the regional ecology, but to recreational and commercial interests as well. Individual kelp fronds live only about 6 months (during which they may grow 99 feet or more in length), but new fronds are continually produced during the several year life span of the plant (Rosenthal *et al.* 1974).

Figure 9. *Kelp forest habitat (Dean DePhillipo)*

Kelp beds in the Sanctuary are productive habitats that provide food, attachment sites, and shelter for a myriad of invertebrates and fishes. The dense thicket of kelp in the water column and at the surface is particularly important as a nursery habitat for juvenile fishes (Carr 1989). Locations supporting kelp generally have been consistent through time, but the extent of these beds has varied considerably based on environmental conditions such as water temperature and natural predation. Greater habitat heterogeneity at the Islands has resulted in increased kelp forest species diversity compared to mainland kelp beds (Murray and Bray 1993).

Surfgrass and Eelgrass Habitat

The two types of marine flowering plants found in the Sanctuary, surfgrass and eelgrass, form dense beds on different substrate and in different conditions. Surfgrass beds are highly productive and complex microhabitats that support a wide variety of marine species. Eelgrass beds are also known to be

ecologically important for primary production, nutrient cycling, and substrate stabilization (Phillips 1984). Eelgrass provides habitat and food for a unique assemblage of plants, invertebrates, and fishes (den Hartog 1970; McConnaughey and McRoy 1979; Phillips 1984). The diversity of conspicuous plant, invertebrate, and fish species was nearly twice as high within eelgrass beds as on surrounding sand habitats (Engle *et al.* unpublished data).

The largest beds of eelgrass in the Sanctuary occur at Smugglers Cove, Canada del Agua, and Prisoners Harbor on Santa Cruz Island and at Bechers Bay on Santa Rosa Island. Moderate beds are found at Scorpion and Forney coves on Santa Cruz Island and at Johnsons Lee on Santa Rosa Island. A few small patches of eelgrass exist at Cathedral Cove and Cat Rock on Anacapa Island and at Yellowbanks Anchorage on Santa Cruz Island. The single patch at Cathedral Cove is the only known remnant of once widespread beds scattered along the north side of Anacapa Island.

Intertidal Zone Habitats

Intertidal zones consist of a variety of coastal habitats periodically covered and uncovered by waves and tides. This transition zone between sea and land is the strip of shore ranging from the uppermost surfaces wetted during high tides to the lowermost areas exposed to air during low tides. Tidal heights within the Channel Islands can be as high as 9.9 feet during full or new moon periods. On surf-swept rocky cliffs, the wave splash can extend water upward of another 17 feet or more.

Intertidal habitat within the Sanctuary is composed of approximately 94.5 miles of rocky coastline interspersed with approximately 47 miles of sandy beaches (California Resources Agency, CDFG 2002). Rocky shores support a rich assortment of plants and animals, including numerous green, brown, and red algae, as well as beds of surfgrass. A wide variety of sedentary invertebrates, including barnacles, limpets, and mussels compete for space with the plants in the intertidal zone. Mobile invertebrates, such as snails and crabs, often hide in crevices or under rocks, then emerge to graze on plants or prey on other animals. These intertidal organisms withstand varying degrees of wave shock, dramatic temperature changes, desiccation, and attacks from terrestrial predators.

Fishes in intertidal habitats are limited to tidepools or passing through the intertidal zone at high tide. Seabirds forage in the intertidal at low tide while some roost in aggregations on cliffs just above the shore. Seals and sea lions depend on many of the Sanctuary's intertidal shores for hauling out, especially at San Miguel and Santa Rosa Islands.

Nearshore Subtidal Habitat

Subtidal habitats include those marine habitats ranging from the lower limit of the intertidal zone down to 99 feet. Nearshore subtidal habitats include mud, sand, gravel, cobble, and bedrock substrates are subject to dynamic physical processes, including wave exposure, coastal currents, upwelling, suspended sediments and variability in temperature, salinity and nutrients.

Nearshore subtidal rocky habitats at the Islands are widespread, especially high relief volcanic reefs with walls, ledges, caves, and pinnacles. Typical shallow subtidal areas in the Sanctuary contain assemblages of plants, invertebrates, and fishes, with giant kelp dominating. However, many shallow reefs grazed by sea urchins have less giant kelp and greatly reduced species diversity. Deeper reefs have well developed invertebrate cover, including sponges, sea anemones, sea fans, plume worms, bryozoans, and tunicates. Some low-relief nearshore habitats in high current areas are dominated by large numbers of brittle stars or sea cucumbers. Low-relief sedimentary reefs exist as well, particularly on Santa Rosa Island.

Many sandy nearshore habitats in the Sanctuary have relatively steep slopes composed of coarse shelly debris. Stable sand habitats with fine grain sediments are generally limited to sheltered coves at canyon

mouths, such as those found around Santa Cruz Island. A few of these locations have well-developed eelgrass meadows. Many other sandy habitats consist of patches of shelly sand between rock reefs, forming mosaics of hard and soft substrata.

Deep Water Benthic Habitat

Beyond nearshore subtidal depths are deep-water habitats extending from 99 to greater than 660 feet deep. Well over 90 percent of deep-water benthic habitats in the Sanctuary consist of fine sands in shallower portions, grading into silt and clay-dominated sediments in deeper portions (Science Applications International Corporation 1986; Thompson *et al.* 1993). These soft-bottom particulates are derived from terrestrial runoff and decaying plankton. Coarse sediments occur near Point Conception, and north of San Miguel Island (Blake and Lissner 1993). Fine sediments occur on the sill at the western end of the Santa Barbara Channel, and in the Santa Barbara Basin.

Deep rock bottoms often are located offshore from major headlands and islands, and on the highest parts of undersea ridges, banks, and pinnacles. High relief pinnacles and ridges occur in some areas, such as off the northwest end of San Miguel Island.

Because light rapidly disappears below 165 foot depths, offshore benthic habitats do not support marine plants. Invertebrates can, however, be found in these habitats and include sponges, anemones, cup corals, black coral, sea fans, bryozoans, feather stars, brittle stars, sea stars, and lamp shells. Demersal fishes are common, especially various species of rockfishes.

Water Column Habitats

Water column, or pelagic, habitats consist of discrete portions of ocean waters categorized by variation among multiple factors, such as light penetration, temperature, oxygen concentration, and density. Based on variation among these factors the water column is divided into numerous vertical and horizontal sub-habitats.

Figure 10. *Schooling fish within the photic zone (Stuart Westmorland)*

Major vertical zones within the water column begin at the ocean surface with the microlayer, a fine film of organic molecules. Next, the photic zone, from the surface to a depth of approximately 660 feet, is the portion of the water column in which there is sufficient light for photosynthesis. Within the photic zone there is an important temperature and density gradient called the pycnocline that separates warm, mixed surface water from cool, dense water below. The surface water may reach depths between approximately 130 to 330 feet or more. Below the photic zone lies the mesopelagic zone, from approximately 660 to 3,300 feet, and the bathypelagic zone, from approximately 3,300 to 11,500 feet. Water column habitats within the majority of the Sanctuary do not extend deeper than the mesopelagic zone, though the southern reaches of the Sanctuary boundary near the mouth of Santa Cruz Canyon (a submarine canyon between and offshore

from southeastern Santa Rosa Island and southwestern Santa Cruz Island) approach bathypelagic depths. In general, horizontal variation in water column habitats occurs from the coast to the open ocean, within currents, at differing latitudes, and among gyres.[12] (Thorne-Miller 1999).

Pelagic organisms are highly diverse and many have interesting and unique traits. Pelagic organisms living in the water column are classified as either plankton (passive drifters moving with the water) or nekton (actively swimming organisms). Some of these organisms are found exclusively in the microlayer, while some occupy it only for a part of their life history (*e.g.*, as eggs and larvae), and others are found in the microlayer and other water column zones. The photic zone represents the range limit of phytoplankton, microscopic marine plants requiring light to synthesize their food. Many of the organisms living in the mesopelagic and bathypelagic zones produce light biochemically for such purposes as attracting prey, or disorienting predators. In general, the mesopelagic zone has the greatest species diversity of pelagic fish. (Thorne-Miller 1999).

[12] Circular motions of water that occur in each of the major ocean basins and are centered on subtropical high-pressure regions. Gyres rotate clockwise in the northern hemisphere and counterclockwise in the southern hemisphere.

PART II-B: THE BIOLOGICAL SETTING

The waters swirling around the five islands within CINMS combine warm and cool currents to create an exceptional breeding ground for many species of plants and animals. Forests of giant kelp are home to numerous populations of fish and invertebrates. Every year over 27 species of whales and dolphins visit or inhabit the Sanctuary including the rare blue, humpback and sei whales. On the islands, seabird colonies and pinniped rookeries flourish while overhead brown pelicans and Western gulls search the water for food. This part of Section II describes some of the species of marine plants and animals inhabiting the Sanctuary; for a more complete description, see FEIS (Vol. II, Section 3.0 - Affected Environment).

Plankton

Plankton, single celled marine plants (phytoplankton) and animals (zooplankton), form the base of the food web. Many species of plankton inhabit the Sanctuary and marine life is highly dependent on their growth and productivity. Their numbers, biomass, and production vary greatly both spatially and temporally.

Marine Plants

Marine plants of the Sanctuary are made up of algae and seagrasses. Diversity of marine plants is greater in the SCB and the Channel Islands than along coastal central California. In the SCB, there are at least 492 species of algae and 4 species of seagrasses known to occur of the 673 species described for California (Abbott and Hollenberg 1976; Murray and Bray 1993).

The Channel Islands are transitional, with each island having its own ratio of southern to northern species of marine plants. Although conditions are dynamic, a general pattern emerges: Santa Barbara Island is inhabited by southern species, Anacapa and Santa Cruz islands are intermediate with both southern and northern components, while Santa Rosa and San Miguel islands are populated primarily with northern species (Murray and Littler 1981).

Invertebrates

Benthic invertebrates include species from nearly all phyla of invertebrates living in (infauna) or on (epifauna) the sea floor during most of their lives, though most also have pelagic larvae. Benthic invertebrates may also be characterized as “sessile” (attached or sedentary) or “motile” (free-moving). They range in size from little known microscopic forms (micro-invertebrates) to the more common larger organisms (macro-invertebrates). Pelagic invertebrates (*e.g.*, jellyfish and squid) also exist in the Sanctuary water column.

The Channel Islands support a wide variety of invertebrates due to their transitional location between cold and warm bioregions and diversity of substrates. The substrates include sheltered and exposed coasts at depths from the intertidal to deep slopes, canyons and basins (Thompson *et al.* 1993). The total number of species may well be in excess of 5,000, not including microinvertebrates (Smith and Carlton 1975; Straughan and Klink 1980).

Figure 11. *Market squid (MBNMS)*

Select invertebrates in the Sanctuary include multiple species of corals, prawns, spiny lobster, crabs, sea urchins, sea cucumbers, sea star, abalone, nudibranchs, scallops, mussels, squid, clams, barnacles, snails, salps, tunicates, jellyfish, sea slugs, and anemones. White abalone is protected by the Endangered Species Act (ESA).

Fish

About 481 species of fish inhabit the Southern California Bight (Cross and Allen 1993). The great diversity of species in the area occurs for three principal reasons: 1) the ranges of many temperate and tropical species extend into and terminate in the SCB; 2) the area has complex bottom topography and a complex physical oceanographic regime that includes several water masses and a changeable marine climate (Cross and Allen 1993; Horn and Allen 1978); and 3) the islands and nearshore areas provide a diversity of habitats including soft bottom, rock reefs, extensive kelp beds, and estuaries, bays, and lagoons.

The fish species found around the Channel Islands generally are representative of fish assemblages occurring along the southern California coast, with the addition of some central California species (Hubbs 1974). Abundance of fish assemblages is greater at the northern Channel Islands than at nearby coastal regions of the southern California mainland. Regional upwelling carries nutrient-rich waters from canyons and island shelf areas to surface waters. This results in increased primary productivity and large zooplankton populations, which support abundant populations of small schooling species, such as the northern anchovy, Pacific saury, sardine and mackerel. Larger pelagic (open water) fish prey upon these small schooling species, and together they form a significant contribution to the diet of marine mammals and birds. Island-associated pelagic fish are commonly consumed by pinnipeds and tooth whales.

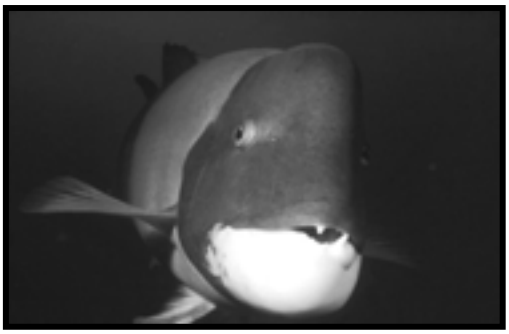

Figure 12. *California sheephead (CINMS)*

Fishes commonly found in the Sanctuary include: albacore, anchovy (northern), barracuda (Pacific), bass (various species), bat ray, blacksmith, bocaccio, bonito (Pacific), brown smoothhound, butterfish (Pacific), California scorpionfish, cabezon, California sheephead, California moray, California flyingfish, California halibut, croaker, (various species), eel, monkeyface, garibaldi, goby (various species), greenling (various species), grunion, gunnel, hake, Pacific half moon, horn shark, jacksmelt, kelpfish (various species), mackerel (various species), northern ronquil, ocean sunfish, opah, opaleye, orangethroat pikeblenny, queenfish, reef perch, rock wrasse, rockfish (various species), ronquil, stripedfin, salmon (king), sanddab, sarcastic fringehead, sardine (Pacific), sargo, saury, Pacific sculpin, seaperch (various species), señorita, shark (various species) silversides, sole (various species), spotted cusk-eel, surfperch (various species), swordfish, thornback, topsmelt, tube snout, turbot (various species), white sea bass, whitespotted greenling, yellowfin fringehead, and zebra perch.

Sea Turtles

Four species of sea turtles have been reported in the offshore southern California region: green, loggerhead, olive ridley, and leatherback (Cordaro 2003). Most information on sea turtle distribution in southern California is based on stranding data. This stranding data indicates all four species of sea turtle may be found within the Sanctuary at any time of year (Cordaro 2003). All sea turtles are protected by the ESA.

Seabirds

Figure 13. *Western Gull (CINMS)*

Over 195 species of birds use open water, shore, or island habitats in the Southern California Bight (Baird 1993). The Channel Islands region is located along the Pacific Flyway, a major migratory route for birds, and acts as a stopover during both north (April through May) and south (September through December) migrations. The months of June and July are peak months for transient shorebirds (Lehman 1994). The diversity of habitats provided both on- and offshore also contributes to the high species diversity in the region. Sandy beaches provide foraging and resting habitat for a number of shorebirds including Black-Bellied Plover, Willet, Whimbrel, Long-billed Curlew, gulls, and sanderlings. The upland potions of the beach provide kelp deposits that attract invertebrates where Black and Ruddy Turnstones, dowitchers, and other shorebird species forage. Several bird species within Sanctuary region have special status (of concern, threatened or endangered) under federal or state law. The Sanctuary provides important habitat for eight seabirds with special status under federal or state law: Ashy storm-petrel, Black storm-petrel, California brown pelican, California least tern, Double-crested cormorant, Rhinoceros auklet, Western snowy plover, and Xantus's murrelet.

Marine Mammals

There are three marine mammal groups in the Sanctuary: 1) whales, dolphins and porpoises (cetaceans); 2) seals and sea lions (pinnipeds); and 3) the southern sea otter.

Cetaceans live their entire lives at sea, while pinnipeds come ashore periodically to rest, breed, bear young, or molt. Pinnipeds depend on several haulout and rookery sites throughout the Channel Islands. In California, sea otters normally spend their entire lives at sea, though some do haul out on land. All marine mammals are protected under the Marine Mammal Protection Act of 1972 (MMPA). In addition, some marine mammals are protected under the federal and state ESA. Species with special protected status are listed in CDFG (2002).

The abundance and distribution of marine mammals is an important indication of the general health and ecological integrity of the Sanctuary. Marine mammals feed on fishes and invertebrates, which feed on other marine life of the Channel Islands region. The distribution and abundance of marine mammals depend on healthy marine habitats, such as kelp forests and associated rocky reef ecosystems.

Whales Dolphins And Porpoises

At least 33 species of cetaceans have been reported in the Sanctuary region (Leatherwood *et al.* 1982; Leatherwood *et al.* 1987). Most of the reports involve live sightings although a few are known only from strandings. Common species found in the Sanctuary include: long-beaked common dolphin, short-beaked common dolphin, Bottlenose dolphin, Pacific white-sided dolphin, Northern right whale dolphin, Risso's dolphin, California gray whale, Blue whale, and Humpback whale. In winter and spring during the gray whale migrations, orcas are frequently reported in the region.

Seals and Sea Lions

The productive waters and relatively undisturbed environment of the Sanctuary provides vital habitat for pinnipeds, offering important feeding areas, breeding sites, and haul outs. Three species commonly found throughout or in part of the Sanctuary are the California sea lion, northern elephant seal, and Pacific harbor seal. Rare or uncommon species sighted within the Sanctuary include the northern fur seal, Guadalupe fur seal, and Steller sea lion.

Figure 14. *Elephant seal, San Miguel Island (Robert V. Schwemmer)*

Sea Otters

Sea otters were common in the Channel Islands until prolonged periods of hunting led to local extinction at the Islands and severe depletion along the mainland California coast. An international treaty banning sea otter hunting was established in 1911 in order to protect the few remaining individuals. The California population slowly increased from a remnant colony off Bixby Creek in central California, which was discovered in 1937.

The population slowly increased until the 1970s, when it began to decrease as a result of entanglement mortality due to fishing gear. Once state regulations addressed the entanglement issue, the population began to increase again until a decrease was observed once again in the mid 1990s. Annual population counts steadily decreased through 1999 (Tinker *et al.* 2006). The cause of that population decline is not known, but mortality sources can include disease, shark attacks, shooting, entanglement in fishing gear, and starvation. In recent years, the population has shown fluctuations in both pup and independent sea otter population size (USGS Census reports). The 2007 USGS Western Ecological Research Center sea otter spring survey found 106 independent sea otters and zero confirmed pups south of Point Conception.

Although the long-term status of the population is unclear, the geographic range of the population has expanded to the north and south. The recovering California stock of sea otters now generally ranges from Point Conception north to Año Nuevo Island, in Santa Cruz County. From 1987 to 1990, the USFWS, which has primary jurisdiction over sea otters, translocated 140 otters to San Nicolas Island, though as of 2004 only 32 otters (excluding dependent pups) were counted at the Island (USFWS 2005). Following the translocation rare sightings of sea otters in the Sanctuary have been reported. In 2005, the USFWS issued a supplemental environmental impact statement (SEIS), supplementing the 1987 statement that originally evaluated the translocation program, in which they proposed terminating the translocation program and not removing otters from the translocation or management zones at the time the decision is made to terminate the program. While sea otters have not yet recolonized areas within the Sanctuary, they would likely eventually reestablish their range within Sanctuary boundaries (USFWS 2005). Sea otters are not expected to have an effect on the Sanctuary within ten years (USFWS 2005). The southern sea otter is listed as threatened under the federal ESA and fully protected under California state law.

PART II-C: THE HUMAN SETTING

For 13,000 or more years before European contact, the ancestors of today's Chumash peoples lived and thrived on the Channel Islands and surrounding waters that we now call a National Park and National Marine Sanctuary. In early historic times, maritime activities resulted in many ships running aground or sinking within the dangerous waters surrounding the Channel Islands, leaving us today with hundreds of historic shipwrecks, some discovered and many still lost. This rich maritime heritage of the Channel Islands region stands as a testament to the cultural importance and historic value of the Sanctuary.

In modern times, the unique nature of the Sanctuary region has attracted many commercial and recreational uses. The proximity of the northern Channel Islands and Santa Barbara Island to the mainland coast makes them uniquely accessible from Santa Barbara, Ventura, Port Hueneme, and Channel Islands Harbors as well as ports in Los Angeles County (primarily San Pedro and Terminal Island). Human use of the Sanctuary is not limited to regional residents; almost 20 percent of those who use California's coastal areas for recreation are interstate or international visitors ([California] Resources Agency of California 1997).

Within the Sanctuary region, population growth has risen sharply over the last twenty years. The population of southern California is nearly 20 million, including a combined population of over 1.1 million for the two counties adjacent to the Sanctuary, Santa Barbara and Ventura (U.S. Census Bureau 2000a). This represents a regional increase in population of approximately 43% since 1980 (U.S. Census Bureau 1995). As the numbers of people increase, so do the number of Sanctuary users involved in a wide variety of activities. Today the number of regional Sanctuary users is growing exponentially.

The purposes and policies of the National Marine Sanctuaries Act include to both "protect…the natural habitats, populations and ecological processes" (16 USC sec. 1431(b)(3)) of the Sanctuary and "facilitate to the extent compatible with the primary objective of resource protection, all public and private uses of the resources of [the Sanctuary] not prohibited pursuant to other authorities" (16 USC sec. 1431(b)(6)). CINMS staff recognize the fact that each year thousands of people come to the Sanctuary to work and play, and the area's resources are an important part of individual livelihoods and recreation. Managed correctly, use and enjoyment of the Sanctuary can continue to thrive for generations to come.

This section briefly describes the Sanctuary's maritime heritage and summarizes a wide variety of commercial and recreational uses occurring within CINMS. Additional details about human activities within the Sanctuary can be found in the FEIS (Vol. II, Section 3.0).

Maritime Heritage

Maritime heritage resources (MHRs) consist of paleontological remains, prehistoric archaeological sites and associated artifacts, shipwrecks, aircraft wrecks, and material associated with wharves, piers and landings. These resources represent a broad time-span of the Santa Barbara Channel's cultural history. Early human remains of a woman ("Arlington Springs Woman") were discovered at Arlington Canyon on Santa Rosa Island, dating back to the end of the Pleistocene, approximately 13,000 years before present (B.P.). Historical remains may exist from as early as Juan Rodriguez Cabrillo's voyage of 1542 to 1543, through modern times.

Shipwrecks and Aircraft Wrecks

For hundreds of years, mariners transiting this region have been faced with prevailing winds, extreme weather conditions and natural hazards. Between the years 1853 to 1980, an inventory of over 140

shipwrecks and aircraft wrecks has been documented in the Sanctuary (Morris and Lima 1996). To date about twenty of these sites have been located. These wrecks reveal the diverse range of activities and nationalities that traversed the Santa Barbara Channel. They include vessels engaged in various trades; California Gold-Rush, passenger and cargo, lumber, international coal and grain, fisheries, military and island commerce. These American and European shipwrecks depict a remarkable diversity in sail and steam propulsion.

The Sanctuary has a very active shipwreck reconnaissance program working in partnership with the Channel Islands National Park and Coastal Maritime Archaeology Resources (CMAR) avocational group. Several of the submerged shipwreck sites have been recorded through the development of underwater maps.

Archaeological and Paleontological Artifacts

The coastal portion of the original Chumash homeland stretches along the California coast from north of Morro Bay to Malibu Point in the south, and encompasses the Northern Channel Islands. Occupying hundreds of villages within this area in sophisticated and complex societies, the ancestral Chumash people spoke several related languages throughout the region and relied on a diverse array of natural resources. The marine component alone of the diet consisted of marine mammals, over 150 types of marine fishes (Miller 1988), and a variety of shellfish that included crabs, lobsters, mussels, abalone, clams, oysters, chitons, and other gastropods (Erlandson 1994). Shellfish were also important in other ways to the Chumash economy and material culture. For instance, Island Chumash produced the majority of shell bead money used by peoples throughout southern California (Miller 1988) and beyond. In fact, the modern designation of "Chumash" is derived from Mi'čumaš (or Mi'chumash), a Chumash word for "makers of shell bead money."

Figure 15. *Chumash tomol, Santa Barbara Channel (CINMS)*

The abundance of prehistoric Chumash artifacts found in the Santa Barbara Channel attests to the thriving life ways of the Island Chumash before their forced removal from the Islands due to European incursions. Study of those artifacts may help us understand the long-term viability of those lifeways by determining the relative effects of subsistence and environmental fluctuation on prehistoric faunal assemblages in the Santa Barbara Channel (Raab *et al.* 1995). In addition, this information has helped to piece together important Chumash trade networks and fishing practices, as well as the probable underwater locations of village sites, both near the mainland and within Sanctuary waters, that are now submerged by changes in sea level. During the period the "Arlington Springs Woman" lived, the sea level was at least 150 feet lower than it is today and the Northern Channel Islands were joined as one island (Johnson 2003). It is likely that some submerged artifacts were deliberately deposited in the water during religious ceremonies, were washed to the sea from shore, or have been deposited in the water through cliff erosion. As the descendants of those early people, today's Chumash continue to have a deep spiritual and cultural connection to the Sanctuary, regularly journeying across the Santa Barbara Channel in tomols (seaworthy redwood plank canoes)

traditionally used for thousands of years for inter-village and inter-island trade and travel as well as for offshore fishing.

Recently discovered paleontological remains have also contributed to the rich record of the area. In 1994, for example, a relatively complete pygmy mammoth was discovered on a coastal bluff on the north shore of Santa Rosa Island. This discovery represents the most complete pygmy mammoth discovered in the world to date and suggests a high probability of the existence of submerged paleontological remains within the Sanctuary.

Current Human Activities

Chumash Cultural Activities

Today's Chumash continue to have a deep spiritual and cultural connection to the Sanctuary. Perhaps the most noteworthy Chumash cultural activity in the Sanctuary is the annual journey made by 200 or so Chumash people and their families, friends, and supporters to the island of Limuw, now known as the Channel Island of Santa Cruz. The people join together in an encampment at the traditional village site of *Swaxil* (*a.k.a.,* Scorpion Campground), sharing together the cultural knowledge of their ancestors in story, song, and ceremony, as well as in the crafting and trading of traditional-style jewelry, musical instruments, baskets, cordage, and many other items. The focus of the event is the paddling of the tomol, *'Elye'wun*, across the Santa Barbara Channel from the mainland—a rigorous journey of some 24 miles—and her arrival with her paddlers and support crews. They are welcomed with great ceremony and feasting. Not only does this event represent a deeply significant renewal of Chumash indigenous maritime culture, it also represents a successful collaboration of several years standing among Chumash Maritime Association, Barbareño Chumash Council, many Chumash individuals, CINMS, CINP, SBMM, and many volunteers.

Recreational Activities

Recreational and tourist-related activities occur throughout the waters of the Channel Islands National Marine Sanctuary. Many activities are more heavily concentrated close to the islands and on the eastern half of the CINMS. Sportfishing, diving, whale watching, pleasure boating, kayaking, surfing, and sightseeing are all popular pastimes within the Sanctuary.[13] The recreation and tourism businesses represent over 490,000 person-days[14] of annual activity within the CINMS annually[15] (Leeworthy, Wiley and Stone 2005).

Sportfishing and Consumptive Diving

Due to its relatively mild weather, the Channel Islands region is a leading year-round sportfishing (or recreational fishing) area along the West Coast. In 1999, sportfishing and consumptive diving activity in the Sanctuary generated approximately $24 million in income and supported 654 full and part-time jobs in Santa Barbara, Ventura and Los Angeles counties (Leeworthy and Wiley 2003). Recreational (or sport) fishing is typically done with hook-and-line, nets and spearguns and may be conducted from shore, from vessels, or using SCUBA equipment (consumptive diving). Both sportfishing and consumptive diving (including SCUBA and free-diving) in the Sanctuary take place primarily from private and chartered commercial passenger fishing vessels (CPFVs).

[13] The National Park Service bans use of motorized personal watercraft within one nmi of the islands.
[14] A person-day of activity is defined as one person participating in an activity for one day or any part thereof. For example, one person participating in an activity for three days would account for three person-days of activity.
[15] For charter boat fishing, estimates were based on 2003 CDFG logbooks. For all other fishing activity, data is based on 1999 estimates.

Sport fisheries in the region access both nearshore and offshore areas, targeting bottom and mid-water fish species, primarily in the eastern half of the Sanctuary. Types of fish landed on CPFVs include kelp bass, mackerel, California sheephead, halfmoon, and whitefish. Species commonly targeted by consumptive divers, who travel from all over the world to dive in the Sanctuary, include many rockfish species and kelp bass, halibut, yellowtail and white seabass, as well as lobster and scallops. Offshore fishing focuses on mobile species like yellowtail, tuna, white seabass, barracuda, broadbill swordfish, marlin, and mako shark.

Figure 16. *Recreational fishing, Anacapa Island (CINMS)*

Wildlife Viewing

Wildlife viewing in the Sanctuary, especially whale watching, is very popular due to the high frequency of sightings and diversity of marine life. Day trips are offered from several area landings including Santa Barbara, Ventura and Channel Islands harbors. In 1999, eight whale watch operations accounted for almost 26 thousand person-days of activity and about $1.5 million in revenue from CINMS activity (Leeworthy and Wiley 2003).

A national survey on recreation and the environment conducted in 1999 estimated more than 31.3 million people participated in some form of coastal and marine wildlife viewing or nature-based recreation in the U.S. (NOAA 2003a), while over 6.3 million participated in California (Leeworthy 2001). California ranked second only to Florida in terms of the overall number of participants engaged in marine recreation (over 22 million participants in Florida versus about 18 million in California). Most of the activities captured in this survey either directly or indirectly (visiting beaches, diving/snorkeling, kayaking/canoeing, photographing scenery) involved watching wildlife.

Boating, Sailing, Kayaking, and Surfing

Boating is another popular recreational activity within the Sanctuary, which, due to its numerous protected anchorages and scenic coastlines, is a highly sought-after destination for both sail and powered boats. The Channel Islands are within reach of several ports for single or multiple day trips and Channel Islands, Ventura, and Santa Barbara Harbors contain over 5,000 slips used by recreational, commercial, and research vessels. Numerous vessels also traverse the region while in transit to other ports.

Due to abundant marine life and the presence of large sea caves and rock formations, the Channel Islands are considered a primary destination of interest for sea kayakers in California. Several regional operations offer sea kayaking excursions in the Sanctuary region. Users can also take kayaks out to the islands on commercial or private vessels, and spend single or multiple days kayaking along the islands' shorelines.

In 1999, eight for-hire operators provided over 4000 person-days of sailing in the Sanctuary, and four businesses provided over 1200 person-days of kayaking/and sightseeing in the Sanctuary. These operators received about $390 thousand in revenue from this activity, which in turn generated over $797

thousand in income and supported 24 full and part-time jobs in Ventura and Los Angeles counties (Leeworthy and Wiley 2003).

Although there are several surfing areas located around the Channel Islands, they are not well documented. Surfing occurs year-round within the Sanctuary, but is generally most popular during the summer months. The number of surfers visiting the Sanctuary has risen steadily over the past several years, with the most popular destinations being closer to mainland ports.

Figure 17. *Scuba diving is a popular activity in the Sanctuary. (CINMS)*

Non-Consumptive Diving

The Sanctuary region is considered to have some of the most highly sought after diving locations in the world. There is great interest in non-consumptive diving in the Sanctuary due to the diversity and beauty of the marine habitat, shipwrecks, and other underwater historical sites. Of the over 140 wrecks in the Channel Islands National Park and National Marine Sanctuary, 21 of these have been located and are popular dive sites. In 1999, seven charters operators accounted for almost 11 thousand person-days of nonconsumptive diving in the Sanctuary and earned approximately $685 thousand in revenue (Leeworthy and Wiley 2003).

Commercial Activities

Fishing

The Sanctuary has extremely productive commercial fishing grounds. Commercial fishing gear used in the Sanctuary includes nets, traps, lines, and dive equipment. The majority of target species are caught in nearshore waters containing giant kelp beds, an important habitat for numerous species. Key target species include: squid, sea urchin, spiny lobster, prawn,[16] nearshore and offshore finfishes (*e.g.*, rockfishes and California sheephead), coastal pelagic species (*e.g.*, anchovy, sardine, and mackerel), flatfishes (*e.g.*, California halibut, starry flounder, and sanddabs), rock crab, sea cucumber, tuna, and kelp. Live fish trapping for rockfish, California sheephead, California scorpionfish and other shallow water species occurs primarily near the coastlines of the Channel Islands. In addition, trap gear is used to take shrimp and prawns, California spiny lobster, and three types of rock crab (red, brown and yellow). Other fisheries include shark and swordfish drift netting, squid seining, urchin diving, ocean (or pink) shrimp trawling, and diving or trawling for sea cucumbers. Most of California's commercial dive sea cucumber catch is from the four northern Channel Islands (Leet *et al.* 2001). Abalone, once one of the most valuable fisheries in the Sanctuary (over $2.5 million harvested between 1988 and 1997 according to Leeworthy and Wiley 2003) and state, was closed to commercial harvest by the state legislature in 1997. There is a small but increasing fishery for turban snails and whelks, which is not currently regulated.

Of the Sanctuary's commercially caught species market squid, sea urchin, and spiny lobster are some of the most economically valuable, with squid and urchin exceeding the market value of all other species.

[16] Prawn fisheries in the Sanctuary area have historically included trawl and trap fishing for spot prawns and trawl fishing for ridgeback prawns. In 2003 the California Fish and Game Commission adopted a prohibition on spot prawn trawl gear.

Table 1 shows the average ex vessel value of marine species, by group, caught in CINMS and landed commercially between 1996 and 2003.

Table 1. Average Ex Vessel Value of CINMS Commercial Catch (1996 – 2003)

Species Group	Value	Species Group	Value
Squid	$10,788,355	Shark	$34,397
Kelp	$5,991,367	Abalone [3]	$0
Sea Urchins	$4,320,544	Swordfish	$50,087
Spiny Lobster	$1,024,536	Roundfish	$32,736
Prawn[1]	$210,978	Others	$22,493
Rockfish[1]	$152,892	Yellowtail	$8,066
Crab	$414,732	Shrimp	$3,505
Tuna[1]	$3,085	Mussels & Snails	$5,819
Wetfish	$474,251	Salmon	$5,119
CA Sheephead[2]	$155,290	Rays & Skates	$993
Flatfishes	$218,328	Surf Perch	$412
Sea Cucumbers	$222,007	Grenadiers	$106
Sculpin & Bass	$93,203	Octopus	$105
All Species/Species Groups = $24,233,406			

1. Prawn, Rockfish and Tuna values are 2003 values due to steep declining trends prior to 2003 (2003 value was deemed most appropriate for use by NOAA economists – see source for more information).
2. CA Sheephead value is the 2000-2003 average (deemed most appropriate years for averaging by NOAA economists due to a leveling out of trends during this period – see source for more information).
3. Abalone value from 1996 is excluded from averaging since all commercial abalone harvest has been prohibited since 1997.
Source: Leeworthy *et al.* (2005)

Kelp Harvesting

For over 50 years, giant kelp harvesting occurred near Point Conception, San Miguel Island, Santa Rosa Island and near Point Mugu and was, prior to 2005, another of the Sanctuary's most valuable harvested species. In 1999, kelp harvested from the CINMS had a processed value of about $6 million (Leeworthy and Wiley 2003). Commercial kelp harvesting ended in 2005 for economic reasons. The total demand for kelp products, which were produced in San Diego, declined (Glantz of ISP Alginates personal communications). Before 2005 and the closure of the San Diego operation, the surface canopy of kelp forests was harvested several times annually in state waters (Kimura and Foster 1984; CDFG 2002).

Oil and Gas

The Santa Barbara Channel is rich in oil and gas resources. As a result numerous oil and gas activities have occurred in this region for over a century and oil has been extracted from the Santa Barbara Channel region since 1896 (Lima 1994). In 1969, a blowout at the Unocal platform off the California coast near the town of Summerland caused a significant oil spill along the south central California coast. The impacts resulting from this accident were one of the major factors contributing to the designation of the CINMS in 1980. Since designation all new oil and gas exploration, development, and production activities have been prohibited in the Sanctuary.

Currently, there are 79 remaining federal outer continental shelf (OCS) active leases off the coast of Southern California (MMS 2008). Of these 79 federal leases there are a total of 43 developed (producing) leases (MMS 2008), 39 of which are in the Channel Islands region. Three lease units pre-date CINMS

designation and slightly overlap the Sanctuary at its eastern boundary; the rest are outside of the Sanctuary. The status of the oil fields containing the active leases is provided in FEIS section 3.5.1.

Figure 18. *Platform Gail, Santa Barbara Channel (Laura Francis)*

Shipping

CINMS is located in close proximity to Los Angeles/Long Beach Harbor, the second busiest port in the United States,[17] and Port Hueneme, a deep-water international port. These ports generate extensive commercial shipping traffic transiting the Santa Barbara Channel using shipping lanes passing through the Sanctuary at its northeast boundary (an average of 6,500 cargo vessels travel through the Santa Barbara Channel each year).[18] CINMS is one of only two internationally accepted "areas to be avoided" (ATBAs) for oil tankers on the Eastern Pacific. As a result, oil tankers often voluntarily reroute to the outer Santa Barbara Channel, outside the Sanctuary.

Department of Defense/Homeland Security Activities

Currently, CINMS maintains a positive and important working relationship with the regional representatives of United States military, which maintains a strong presence in the CINMS region. The U.S. Air Force and U.S. Navy, individually and together, conduct training exercises, and support military testing and evaluation projects for aircraft, ship, and missile programs. Both support commercial space launch missions as well. The Vandenberg Air Force Base (VAFB), Point Mugu Sea Range and Port Hueneme coastal and marine areas are the primary locations for these military activities.

VAFB, located in western Santa Barbara County, is headquarters for the U.S. Air Force's 30th Space Wing. The Air Force's primary missions at VAFB are to launch and track satellites in space, test and evaluate America's intercontinental ballistic missile systems and provide aircraft operations in the Western Range. VAFB also supports commercial space launch ventures and supports aircraft and helicopter training and testing

In addition to mainland facilities, Point Mugu encompasses a 36,000 square mile Sea Range that supports five categories of tests to evaluate sea, land and air weapons systems: 1) air-to-air testing; 2) air-to-surface testing; 3) surface-to-air testing; 4) surface-to-surface testing; and 5) subsurface-to-surface testing. In addition, the Sea Range supports fleet training exercises, small-scale amphibious warfare training and special warfare training.

[17] Information about L.A/Long Beach Harbor is available at: http://www.polb.com/html/1_about/overview.html.

[18] A Traffic Separation Scheme (TSS) manages vessel traffic in the Santa Barbara Channel. Voluntary routes that separate opposing flows of traffic with an empty safety lane, TSSs are typically in international waters and must be approved by the International Maritime Organization (IMO). In addition, CINMS is one of only two internationally accepted "areas to be avoided" (ATBAs) for oil tankers on the eastern Pacific. ATBAs are areas within defined limits in which either navigation is particularly hazardous or it is exceptionally important to avoid casualties and which should be avoided by all ships or certain classes of ships. As a result, oil tankers voluntarily reroute to the outer Santa Barbara Channel.

The U.S. Coast Guard (USCG), which operates a Marine Safety Detachment and Coastal Patrol Boat at Santa Barbara, California and a Station and Coastal Patrol Boat at Oxnard, California conducts several activities in the Sanctuary region, such as search-and-rescue, migrant and drug interdiction, fisheries enforcement, marine environmental protection, marine mammal protection and monitoring and inspection of all international vessels experiencing mechanical difficulty and distress.[19]

Research Activities

The Channel Islands are the subject of extensive scientific interest as thousands of academic and professional researchers conduct research activities within CINMS and are producing a myriad of Sanctuary-focused articles, academic papers, and other products.

The Channel Islands are the subject of extensive research activities, most of which fall under the following categories: physical and biological science research; socioeconomic, cultural, and historic research; and political science research. Within each of these categories research projects are typically:

1. *Intramural* (projects are funded by the NMSP and conducted by CINMS staff);
2. *Extramural* (projects are funded and conducted by outside agencies and institutions); or
3. *Directed* (projects are conducted by outside agencies and institutions with guidance and/or support from CINMS and the NMSP).

Physical and Biological Science Research

Research activities pertaining to the Sanctuary's physical and biological setting are the most extensive. In their report *Summary of Research Programs in the Channel Islands National Marine Sanctuary,* Abeles *et al.* (2003) provide a comprehensive assessment of major physical and biological science research activities in the Sanctuary to date, with a focus on studies including a long-term monitoring component. As shown in Table 2 below, the report categorizes 43 research projects in the Sanctuary according to ecological levels of classification: population studies (marine plants, marine invertebrates, marine fish, marine birds, marine mammals), community studies, environment studies, and ecosystem studies.

Table 2. Summary of Major Biological and Physical Science Research Activities in CINMS (adapted from Abeles et al. (2003) and updated with information provided by MMS)

Study	Agency, Institution Or Researcher	Data Collection Period
Category 1: Population Studies		
Marine Plants		
Aerial kelp canopy monitoring	CINMS	1999 -
Eelgrass Surveys	UCSB	1992 -
Marine Invertebrates		
Anacapa urchin reef surveys	UCSB	1981 -
White abalone studies	CDFG	mid-1980's -
ROV market squid surveys	CDFG	1999 -
Aerial market squid surveys	CDFG	1992 - 2000
Marine Fish		
Acoustic telemetry monitoring	PIER	2000 - 2006
Giant sea bass monitoring	Kathy de Wet-Oleson	1997 -

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[19] Although the U.S. Coast Guard is not technically considered part of the military, nor does it fall under the authority of the Department of Defense but rather the Department of Homeland Security, due to the similar nature of some of their activities, they are described here.

Table 2. Summary of Major Biological and Physical Science Research Activities in CINMS (adapted from Abeles et al. (2003) and updated with information provided by MMS)

Study	Agency, Institution Or Researcher	Data Collection Period
Nearshore SCUBA surveys	UCSB	1995 -
Midwater trawl surveys	UCSB	1995-2000
Deepwater submersible surveys	UCSB	1995 -
Marine Birds		
Cormorant monitoring	Humboldt State University	1991-2003
Xantus's Murrelet 1	Humboldt State University	2000 -
Xantus's Murrelet 2	Humboldt State University	2001 -
Pelican and Cormorant studies	CA Inst. of Env. Studies &UC Davis	1970 - 1995
Cassin's Auklet studies	USGS	1999-2001
Ashy Storm-Petrel studies	USFWS, USGS, Humboldt State University Foundation	1995-1998; 1999-2002.
Seabird population dynamics	CINP	1985 -
Marine Mammals		
Pinniped populations studies	National Marine Mammal Laboratory	1968 -
Aerial pinniped monitoring	NOAA Fisheries	1981 & 1987
Sea lion diet studies	NOAA Fisheries	1981 -
Harbor seal annual census	CDFG	1982 -
Humpback and blue whales	Cascadia Research	1986 -
CI Naturalist Corps marine mammal observations	CINMS	2000
Category 2: Community Studies		
Sand beach and coastal lagoon	CINP	1994 -
Rocky intertidal monitoring	CINP	1982 -
Kelp forest monitoring	CINP	1982 -
Subtidal @ San Miguel Island	California Abalone Association	2001-2002
REEF monitoring	REEF	1997 -
Biogeography of nearshore fishes	Vantuna Research Group, Occidental College	2000
PISCO	UCSB, UCSC, Stanford, OSU	1999 -
Wind to whales	UCSC	1995; 1997; 2000
Collaborative marine research	CINMS, CDFG, NOAA Fisheries, Sea Grant, UCSB, PISCO, Santa Barbara and Ventura fishermen	2001 -
SAMSAP	CINMS	1997 -
Category 3: Environment Studies		
CODAR	UCSB	1997 -
Remote sensing	CINMS	1997 -
Side scan sonar mapping	USGS	1998 -
Over 30 publications on oceanography research in the Santa Barbara Channel*	Scripps Institution of Oceanography, Minerals Management Service	1991 -
Category 4: Ecosystem Studies		
So. Cal. Bight Regional Marine Monitoring	CINMS, SCCWRP, LA County Sanitation District	1998; 2003
Plumes and Blooms	Institute for Computation Earth System Sciences	1996 -

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Table 2. Summary of Major Biological and Physical Science Research Activities in CINMS (adapted from Abeles et al. (2003) and updated with information provided by MMS)

Study	Agency, Institution Or Researcher	Data Collection Period
Long-Term Ecological Research (LTER) Program	UCSB	(not provided)
California Cooperative Oceanic Fisheries Investigations (CalCOFI)	CDFG, NOAA, NOAA Fisheries, UC Scripps Institute of Oceanography	1951 -
Marine Ecological Reserves Research Program (MERRP)	CDFG, Sea Grant, NOAA Fisheries	1997 -

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*See http://www.gomr.mms.gov/homepg/espis/espisfront.asp to find more information on these publications.

Socioeconomic, Cultural, and Historic Research

Research activities pertaining to the Sanctuary's human setting include socioeconomic studies of industries and individuals linked to the Sanctuary, as well as studies of maritime heritage resources. Socioeconomic studies in the Sanctuary have not been as extensive as other research projects in the Sanctuary. However, since the California Department of Fish and Game and CINMS began the Channel Islands marine protected area (MPA) network process, several socioeconomic studies have been undertaken and a major socioeconomic monitoring program is being developed and implemented. Maritime heritage resource research is focused on either studies of Chumash artifacts, paleontological remains, or studies of historic shipwrecks, aircraft wrecks, and material associated with wharves, piers and landings. The NMSP and major partners, such as the CINP, the Santa Barbara Maritime Museum, the State of California, and the Coastal Maritime Archaeology Resources (CMAR) conduct the majority of research on Sanctuary maritime heritage resources.

Political Science Research

Political science research focuses on the Sanctuary's operational setting. Several political scientists studying topics such as collaborative stakeholder-based processes, or consensus-based processes, have cited CINMS as a case study. Political science interest in the Sanctuary primarily stems from the Sanctuary's use of the Sanctuary Advisory Council and its working groups. Political science research projects tend to be extramural.

Educational Activities

Educational activities have been a central focus of the Sanctuary since its 1980 designation. Today the Sanctuary plays an important role in public and formal marine science education activities for all ages from K-12, to adults. Sanctuary educational activities have reached a wide variety of audiences on a local, regional, national, and international scale. CINMS educational activities are focused in two strategic areas: 1) community involvement, partnerships, and community program development, and 2) product development.

Community Involvement, Partnerships and Community Programs

Community involvement is an essential component of the CINMS Education and Outreach program. Community involvement in Sanctuary educational activities is achieved in large part through the Channel Islands Naturalist Corps: a volunteer corps of naturalists trained to provide interpretation about the Sanctuary and Park on a variety of passenger vessels, such as whale watch and dive boats, as well as at outreach and special events. Community involvement in educational activities is also achieved through the Sanctuary Advisory Council and in particular its Sanctuary Education Team. This team is made up of community members who work to address Sanctuary education needs, and to keep local educational institutions informed about Sanctuary educational opportunities. Advisory Council members at large are

charged with keeping their constituents educated about the Sanctuary. Community involvement in educational activities is also achieved through participation in Sanctuary events and programs.

Figure 19. *MERITO Academy students remove non-native ice plant from Anacapa Island. (Rocío Lozano)*

Together the Sanctuary and its education partners develop and implement numerous interactive educational programs including training programs, workshops, special events, and school programs. CINMS Education staff present workshops and programs at a variety of regional and national conferences each year such as the Southwest Marine Educators Association, California Science Teachers Association and National Marine Educators Association. Training programs and teacher workshops teach educators about marine science using the Sanctuary as subject matter, and many are linked to Sanctuary products such as curriculum packages and CD-ROMs. Other workshops target a broader segment of the community, such as the Marine Wildlife Viewing Workshop, which is open to all members of the public interested in responsible wildlife viewing practices. Each year the Sanctuary sponsors a variety of public educational cruises targeting varying audiences including local residents, tourists, school children and community groups. These cruises provide field experiences in the Sanctuary and may include activities such as: intertidal and sandy beach monitoring, floating labs, students on research vessels posing questions to divers below using live video and audio feed, kayaking, diving, and wildlife viewing. Sanctuary staff and volunteers facilitate hands-on activities such as oceanography experiments, fish identification, marine mammal and seabird identification, fish surveys, and wildlife viewing to encourage an understanding and stewardship for Sanctuary resources. The Sanctuary and its partners also support marine science programs in local schools such as MERITO and the Channel Islands Argonauts.

Beyond these formal educational programs sponsored by CINMS and its partners, educational activities are also provided at community programs such as whale festivals, harbor festivals, boat shows, and dive industry events. This management plan outlines many additional community-based programs the Sanctuary plans to implement such as multicultural-targeted marine science after-school programs, and volunteer boater interpretive enforcement through the Team OCEAN and Marine Watch programs.

Educational Products

The second strategic area of Sanctuary educational activities is composed of Sanctuary educational products including: printed materials, the Sanctuary website, audio-visual materials, signs, displays, and exhibits. Some of these educational products, such as curriculum packs, are available as materials tied to Sanctuary courses, trainings, and workshops. Other products, such as signs, brochures, websites, and displays, are targeted at the general public. The Sanctuary's general educational products are available at the Sanctuary's offices as well as at local businesses, ports and harbors, museums, local visitor's centers, and online. As in the case of educational programs, the Sanctuary's education partners have played a major role in both designing and disseminating educational products about CINMS.

PART II-D: THE OPERATIONAL SETTING

The Channel Islands National Marine Sanctuary (CINMS or Sanctuary) operational setting includes CINMS and National Marine Sanctuary Program (NMSP) administration and management, along with the administration and management of numerous other federal, state, and local agencies with whom the Sanctuary shares jurisdiction over particular resources or activities. This description of the operational setting focuses on the Sanctuary's human resources, infrastructure, Sanctuary Advisory Council, funding, enforcement, and permitting. In addition, it provides brief descriptions of the various federal (internal and external to NOAA), state, and local agencies with jurisdiction relevant to the Sanctuary. The tools the Sanctuary uses to formalize relationships with these agencies are also described.

Human Resources

The Sanctuary Superintendent

While reporting directly to the NMSP West Coast Regional Director, the CINMS superintendent oversees site-specific management functions, including implementation of the management plan. The Sanctuary superintendent also delegates responsibility for implementing specific programs and functions to staff, provides an administrative framework to ensure all resource management activities are coordinated, and provides and manages the budget and infrastructure necessary to support site operations. Responsibilities of the CINMS superintendent include:

- Recommending priorities to the NMSP for annual allocation of funds for site-specific education, outreach, research, monitoring and resource protection needs, such as surveillance and enforcement activities, violations and emergencies;
- Coordinating with the NMSP in the evaluation, processing and issuing of permits;
- Monitoring and evaluating research, education, marine resource management and cultural resource management programs;
- Overseeing staffing needs and requirements;
- Coordinating on-site efforts of all parties involved in Sanctuary activities including state, federal, tribal, regional and local agencies;
- Working closely with constituents and the community; and
- Evaluating overall progress toward the achievement of CINMS goals and objectives.

Sanctuary Staff

Basic staffing resources provide support for the site's seven functional areas:

1. Community and Management Planning;
2. Technology Integration and Management;
3. Site Operations;
4. Resource Protection;
5. Research and Monitoring;
6. Education and Outreach;
7. Maritime Heritage; and
8. Office Administration.

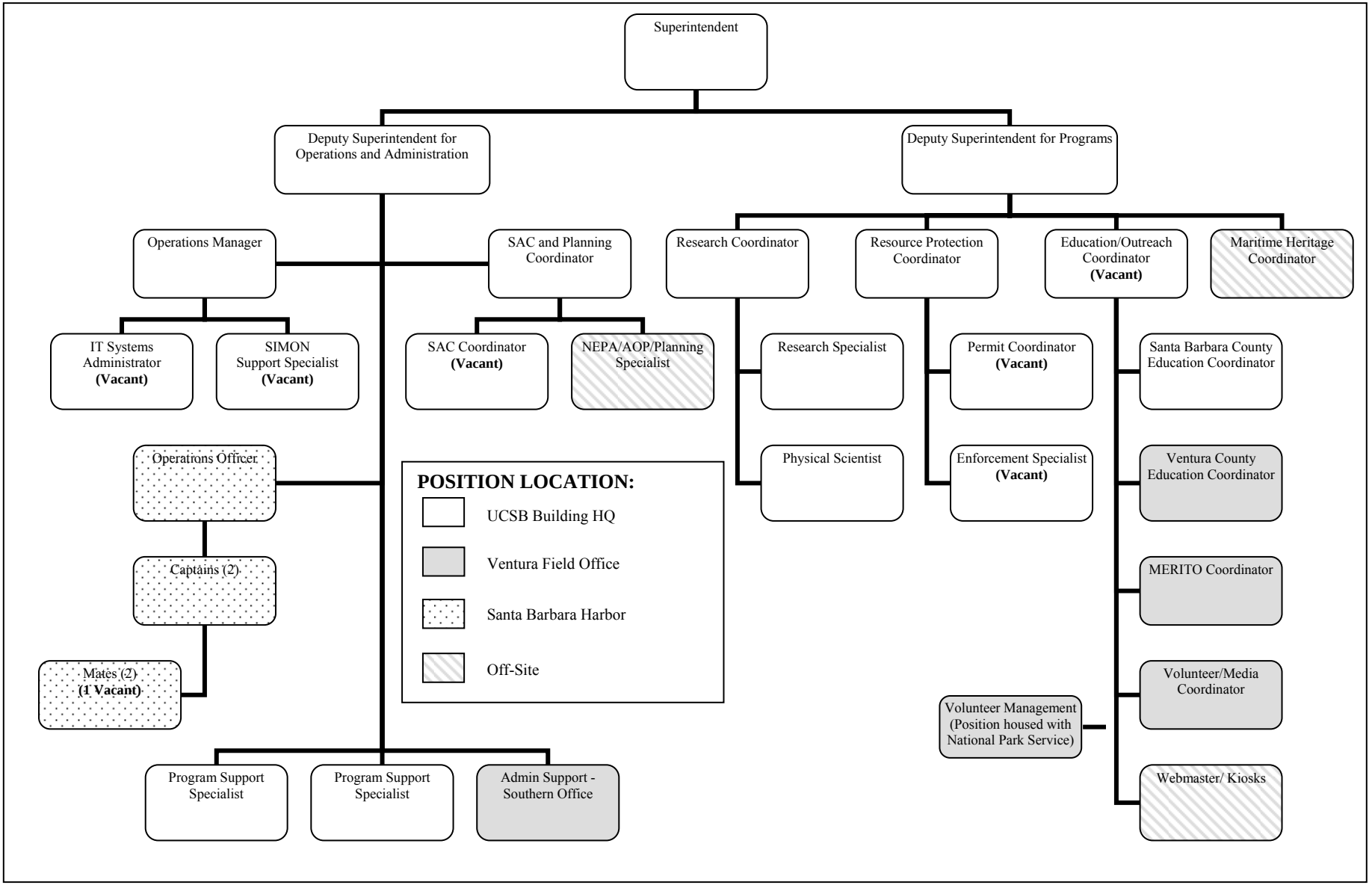

Figure 20. *CINMS Organizational Chart*

Sanctuary staff have knowledge and expertise in policy, marine resource management, education and outreach, volunteer development, research and monitoring, maritime heritage resources, GIS and communications technology as well as office administration. In addition, volunteers and interns are an integral component of Sanctuary staffing. Figure 20 (above) provides a Sanctuary staff organization chart, including new (vacant) positions that management would like to fill as resources allow.

R/V Shearwater

The Sanctuary's state of the art 62' high-speed Teknicraft catamaran R/V *Shearwater* is used primarily as a research platform and provides a major contribution to regional research efforts. In addition, the vessel serves as a host for educational field trips and emergency response in and around the Channel Islands National Marine Sanctuary.

The *Shearwater* arrived in Santa Barbara Harbor on March 25th 2003 and has been in operation approximately 80% of the available days. CINMS staff provide all crew and maintenance for the *Shearwater*, which is outfitted with some of the latest research equipments, such as:

- An A-frame and winch for trawls, CTD casts, sediment sampling, and towing equipment such as sidescan sonar and ROVs.
- Wet and dry labs allow on-board processing of samples and data.
- Onboard facilities and equipment for supporting dive operations.
- On board berthing, stowage, galley and safety equipment allow for multiple-day excursions with crews of up to ten scientists.

R/V *Shearwater (All American Marine)*

Sanctuary Infrastructure

Offices

The main CINMS office is located at the Santa Barbara Harbor, while a southern satellite office is located at the Channel Islands Harbor in Oxnard. In the future, other satellite offices and visitor centers may be located throughout the region as deemed necessary to accommodate the need for additional office space and to improve community outreach efforts. These additional facilities may be developed through various partnerships with both the public and private sector (See Strategy OP.3 of the Operations Action Plan).

Vessels and Aircraft

The Sanctuary currently operates two vessels and works with NOAA and other aircraft in support of research, monitoring, education and emergency response.

The *R/V Shearwater* is the Sanctuary's 62-foot Teknicraft catamaran. This vessel serves as an important multi-day platform, supporting the bulk of CINMS' research, monitoring and education programs, including oceanographic and biological studies. It is equipped with state-of-the-art bridge electronics and oceanographic equipment.

The Sanctuary also maintains a smaller "quick response" vessel. Through 2007, the Sanctuary used a 28-foot Wilson craft called *Xantu* for this purpose. In 2008 the Sanctuary replaced the old *Xantu* with a new vessel. The new vessel is 41-feet in length and features: an advanced composite/fiberglass catamaran hull design; a 15-foot beam; twin turbo diesel engines with biodiesel fuel running capability; room for ten, day-trip passengers; a six-diver capacity; a 300 mile range; and a top speed of 28 knots. Maintaining a small craft has proven invaluable in a number of Sanctuary resource protection incidents such as minor oil spills and vessel groundings. Small craft also provide a research and dive platform, supporting single day trips.

Up until 2007, the Sanctuary maintained its own single-engine amphibious aircraft. As of 2008, the Sanctuary is working with a new aircraft serving numerous NOAA missions on the west coast. The Sanctuary utilizes aircraft primarily for aerial monitoring for vessel traffic, marine mammals and kelp canopy coverage, while conducting general Sanctuary surveillance. When conducting aerial surveys aircraft carry observers and equipment such as GPS/Loran, radar altimeter, hardpoints for camera pods, and a laptop computer with data collection software.

The Sanctuary Advisory Council

The Sanctuary Advisory Council (Advisory Council) includes representatives from 10 government agencies and 11 community stakeholder groups. With its expertise and diverse representation, the Advisory Council provides advice and recommendations to the Sanctuary Superintendent on resource management issues and helps ensure the superintendent has a wide range of viewpoints upon which to base management decisions.

In order to better understand and address specific management issues, the Advisory Council extends its capacities by forming a variety of working groups and subcommittees. Working groups invite additional community members and experts to participate in the development of sound management advice for the Sanctuary. Subcommittees, which remain internal to the Advisory Council, take on specific short-term tasks to assist with a variety of Council needs. For a list of current Advisory Council members see http://channelislands.noaa.gov/sac/main.html.

Relationships With Other NOAA Offices

Of the many NOAA offices, there are several working closely with CINMS and other national marine sanctuaries in a wide variety of capacities, including:

NOAA Fisheries (National Marine Fisheries Service or NMFS)
NOAA Fisheries administers NOAA programs that assess, manage and promote the domestic and international conservation of living marine resources within the United States jurisdiction. NOAA Fisheries' Southwest Region Office (Long Beach, CA) and associated Southwest Fisheries Science Center (La Jolla, CA) serve the Southwestern United states and Pacific Ocean Islands, including the Channel Islands. More specifically, in conjunction with state resource agencies (such as the California Department of Fish and Game) NOAA Fisheries approves and enforces Fishery Management Plans (FMPs) prepared by regional fishery management councils under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). NOAA Fisheries also shares responsibility with the U.S. Fish and Wildlife Service for the implementation of the Marine Mammal Protection Act and the Endangered Species Act, both of which prevent the taking of any endangered, threatened, or otherwise depleted species. As part of the Marine Mammal Protection Act mandate, NOAA Fisheries Office of Protected Resources (OPR) works in collaboration with the Protected Resources Divisions of the NOAA Fisheries Regional Offices and Science Centers to develop and implement a variety of programs for the protection, conservation, and recovery of marine mammals.

NMFS OPR is also responsible for implementing the ESA, generally managing endangered and threatened marine species, including anadromous salmonids. NMFS and USFWS share joint responsibility for managing sea turtles. In the Pacific Ocean, NMFS manages 5 species of sea turtles, over 25 evolutionarily significant units of salmon and steelhead, including their critical habitat, white abalone, 7 large whales and several species of pinnipeds. In coordination with the regional offices and

science centers, OPR develops policies and regulations to implement the provisions of the ESA with the goal of protecting and recovering endangered and threatened marine and anadromous species and their habitat.

NOAA Fisheries offers resources to the Sanctuary such as collaborative assistance on environmental policy processes and enforcement through NOAA's Office for Law Enforcement (OLE). They also provide technical expertise on many issues related to resource protection and management. NOAA Fisheries has one member and one alternate seat on the Advisory Council.

Figure 21. *NOAA Ship McArthur*

NOAA Corps

CINMS has traditionally filled Sanctuary positions with officers from the NOAA Corps, which is administered by NOAA Marine and Aviations Operations. These highly skilled officers are trained in engineering, earth sciences, oceanography, meteorology, fisheries science, and other related disciplines. Throughout NOAA they operate ships, fly aircraft, manage research projects, conduct diving operations, and serve in staff positions. Salaries for officers on billets at national marine sanctuaries are subsidized by the NOAA Corps.

The Office of Response and Restoration (OR&R)

OR&R works to prevent and mitigate harm to coastal resources and is the primary NOAA office responding to oil spills and hazardous material releases. It provides scientific support to the U.S. Coast Guard for spills and technical assistance to other agencies for hazardous material releases. OR&R also works with federal, state, and tribal natural resource trustees to restore damaged coastal resources.

Sea Grant

The National Sea Grant College Program encourages the wise stewardship of marine resources through research, education, outreach, and technology transfer. Sea Grant is a partnership between the nation's universities and NOAA that began in 1966, when the U.S. Congress passed the National Sea Grant College Program Act. Today, the Sea Grant Colleges are focused on marine research and the sustainable development of marine resources. Sea Grant produces and makes available a wealth of information on marine topics - from public school curriculum materials to the most advanced scientific research. Sea Grant fellows work throughout NOAA for a wide variety of offices, including the NMSP.

Damage Assessment Center (DAC)

DAC implements NOAA's responsibilities for natural resource damages assessment for releases of oil and hazardous substances. DAC scientists and economists provide the technical foundation for these assessments and work with other trustees and responsible parties to restore resources injured by releases of oil and hazardous substances, as well as other injury to resources of national marine sanctuaries and estuarine research reserves. DAC collects data, conducts studies, and performs analyses needed to determine whether coastal resources have sustained injury from releases of oil or hazardous materials, how to restore injured resources, and to ascertain the damages that must be recovered to accomplish restoration.

DAC maintains an administrative record to facilitate public input, conducts public outreach activities, documents expenditures to support cost recovery, and administers and oversees significant damage assessment contracting capabilities. DAC works with other NOAA elements and federal and state agencies at both the national and regional levels and supports a network of field offices. DAC provides technical support to NOAA's Office of General Counsel and the Department of Justice for litigation and for settlement of natural resource damage claims.

Office of Coastal Resource Management (OCRM)
OCRM is responsible for implementing the Coastal Zone Management Act of 1972 (CZMA), which Congress passed to address the growing concerns about the health of the nation's coastal resources. The office works with state and territorial governments to implement their coastal management programs and find local solutions to problems occurring throughout the entire nation. Daily management decisions are made at the state and territorial level. Thirty-four states and territories have active coastal management programs.

OCRM works to advance national coastal management initiatives, and to maintain and strengthen state coastal management through financial, policy and technical assistance. It also helps to ensure actions of federal agencies are consistent with state and territory coastal management policies. It undertakes projects with program-wide or system-wide benefits in the areas of coastal habitat protection and restoration; coastal hazards; public access to the shore for recreation; responsible development of coastal communities, including urban waterfronts; and polluted runoff (also known as non-point source pollution or runoff pollution).

The National Estuarine Research Reserve System (NERRS)
NERRS is a network of 25 estuarine areas — places where fresh water from land drainage mixes with saltwater from the sea — established across the nation for long-term stewardship, research, and education purposes. Estuaries can be bays, lagoons or sloughs and are crucial spawning areas for many commercial fish and shellfish. Estuaries also serve to buffer upland areas from flooding. The sites within the estuarine reserve system range in size from 365,000-acre Kachemak Bay, Alaska, to 571-acre Old Woman Creek, in Erie County, Ohio.

The National Ocean Service (NOS) implements NERRS as part of the Coastal Zone Management Act (CZMA) of 1972, which called for the establishment of a network of estuaries representing different biogeographical regions of the United States. Within this network, reserve scientists and other researchers conduct ecological research and their findings are communicated to coastal managers.

Special Projects Office (SPO)
SPO is the focal point for providing NOS and NOAA Program and Staff Offices with planning, data synthesis and assessment, and advanced technical services (*e.g.*, GIS and web mapping, database development, and information visualization tools). SPO's primary goal is to promote integration of program capabilities within and across NOS and NOAA to ensure more effective and efficient delivery of products and services to the coastal stewardship community.

SPO works to build capacity within NOAA and NOS by collaborating with internal partners to define problems and issues, identify information needs, assemble and synthesize relevant data, develop strategies, evaluate options, and develop products and results contributing to and supporting better coastal resource management decision-making. SPO also provides NOS with a quick response capability to anticipate and respond to emerging opportunities to further the coastal stewardship mission.

The National Centers for Coastal Ocean Science (NCCOS)
NCCOS conducts and supports research, monitoring, assessment, and technical assistance for managing coastal ecosystems and society's use of them. These activities fit within a framework of five environmental stressors: climate change, extreme natural events, pollution, introduced species, and land and resource use. NCCOS activities are focused in estuaries, coral reefs, national marine sanctuaries, and national estuarine research reserves, as well as other coastal ecosystems. NCCOS is the primary NOAA office that conducted the CINMS biogeographic assessment for the CINMS boundary evaluation process (see the Boundary Evaluation Action Plan).

MPA Center
The Marine Protected Area (MPA) Center works to implement Executive Order 13158, which directs federal agencies to conserve the nation's valuable marine resources through a variety of tasks related to marine protected areas. This implementation requires considerable cooperation, collaboration, and information sharing among many government and private institutions. Working with the Department of the Interior (DOI) and other partners, the MPA Center: develops the framework for a national network of MPAs; coordinates the development of information, tools, and strategies, and guides agencies in their efforts to enhance and expand the protection of existing MPAs, and to establish or recommend new ones; coordinate the MPA web site; partners with federal and non-federal organizations to conduct research, analysis, and exploration; helps construct and maintain an inventory of existing U.S. marine managed areas and the MPA List; and supports selection of the MPA Advisory Committee and its operation.

Relationships With Other Regional Authorities

CINMS seeks to provide comprehensive and coordinated Sanctuary management in a way that complements existing regulatory authorities and capitalizes on opportunities to establish close working relationships. Within the coastal and offshore waters adjacent to southern California, the Sanctuary operates alongside and in some cases, in direct partnership with local, state, and federal jurisdictions. Several of these partnerships are identified within the specific management strategies proposed in the action plans.

Coastal and offshore waters in the Sanctuary region are divided into several different categories, each of which has varying jurisdictions:

- State tidelands and submerged lands (mean high tide line to three nmi[20] offshore);
- The outer continental shelf (OCS) (seaward of three nmi from shore, with exceptions in Texas and Florida);
- The territorial sea (shoreline to 12 nmi offshore);
- The contiguous zone (12 to 24 nmi offshore);
- The exclusive economic zone (EEZ) (12 to 200 nmi offshore); and,
- The high seas (beyond 200 nmi from shore).

[20] One nautical mile (nmi) is equivalent to 1.852 kilometers or 1.15 statute miles.

Figure 22. *Various jurisdictions in the CINMS region*

Several laws and court rulings have clarified the complex jurisdictional setting of the Channel Islands region. The Federal Submerged Lands Act of 1953 granted ownership of lands and natural resources from the mean high tide line to three nautical miles (nmi) offshore to coastal states. This provided for state control and regulation of the development of resources such as oil and gas and fisheries within three nmi. In addition, the Outer Continental Shelf Lands Act of 1953 established federal jurisdiction over the resources beyond three nmi and created a legal framework within which to manage those resources.

Although the Channel Islands are located more than three nmi from the mainland coast, United States v. California (1965)[21] established state jurisdiction to three nmi offshore from each of the Islands. Federal jurisdiction extends beyond three nmi offshore from the mainland and islands. A detailed description of jurisdictions and the various agencies with regulatory authority is provided in California's Ocean Resources: An Agenda for the Future ([California] Resources Agency of California 1997), and in the FEIS (Vol. II, Section 5.0). Figure 22 shows several county, state, and federal jurisdiction boundaries in the CINMS region.

Tribal Agencies and Organizations

The Chumash are the indigenous people of the Channel Islands and surrounding region. The coastal portion of the Chumash homeland stretches from north of Morro Bay to Malibu Point in the south, and encompasses the northern Channel Islands. The original homeland area includes the total counties of San Luis Obispo, Santa Barbara, and Ventura, as well as portions of Kern and Los Angeles counties. There are a number of Chumash bands active and living within these areas, for example, Coastal Band of the

[21] Available online: http://www.usscplus.com/online/index.asp?case=3810139.

Chumash Nation, Barbareño Chumash Council, Barbareño-Ventureño Chumash, Northern Chumash Tribal Council, Bakersfield Chumash Council, and the Santa Ynez Band of Chumash Indians, among others. Most are acknowledged by the State of California as California Indians, and the inland band of Santa Ynez Chumash also has federal recognition status. More information about the Santa Ynez Band is provided below.

The Sanctuary Advisory Council's Chumash Community representatives as well as the Chumash Community Working Group draw their membership from within all these Chumash tribal groups. Members of the Chumash Community Working Group advise and make recommendations to the Sanctuary Advisory Council concerning Chumash community-related issues, activities or interests at or near the Channel Islands. Similarly, the Chumash Community representatives who serve on the Advisory Council advise and make recommendations to the Sanctuary Superintendent about Chumash community concerns. The Sanctuary highly values its partnership with the Chumash community and looks forward to expanding it.

Santa Ynez Band of Chumash Indians

A goal of Executive Order 13175 is that agencies consult with officials from federally recognized tribes in the development of regulatory policies that have tribal implications, as defined in the order. Such consultation is to occur on a government-to-government basis. The Santa Ynez Band of Chumash Indians is a federally recognized tribe, and sovereign nation with its own constitution and governmental organization. NOAA should, as appropriate, convene a government-to-government consultation with the Santa Ynez Band during regulatory processes to determine what, if any, tribal implications exist. Tribal leadership includes, but is not limited to, a Tribal Chairman and Business Committee, a Tribal Elders Council, the Santa Ynez Chumash Environmental Office, and an Education Committee and Education Program Director (Santa Ynez Band of Chumash Indians (2004).

Federal Agencies and Related Organizations

The National Park Service (NPS)

The NPS is housed within the Department of the Interior and includes the Channel Islands National Park (CINP). The NPS conserves scenery, national, and historic objects and wildlife and provides for the enjoyment of those resources in a manner that will leave them unimpaired for the enjoyment of future generations. CINP's proprietary jurisdiction extends out to one nmi offshore around Santa Rosa, Santa Cruz, Anacapa, and Santa Barbara islands, and non-proprietary jurisdiction extends out to one mile offshore from San Miguel Island. This one nmi of jurisdiction overlaps with the jurisdiction of the Sanctuary.

The NMSP and the NPS are committed to working closely together on the protection and management of shared marine resources across the country. In the Channel Islands region, CINP is an active and integral Sanctuary partner on projects ranging from enforcement, to education and outreach, and research and monitoring. CINP has one member and one alternate seat on the Advisory Council.

The Pacific Fishery Management Council (PFMC)

The PFMC is one of eight regional fishery management councils established by the Magnuson-Stevens Act for the purpose of managing fisheries within the EEZ. The PFMC is responsible for select fisheries off the coast of California, Oregon and Washington. The regulation of fishery resources in national marine sanctuaries is a collaborative process where Sanctuary Superintendents work with other fishery managers, including councils such as the PFMC, to ensure fishery resources are protected.

The U.S. Navy

The U.S. Navy operates the Ventura County Naval Complex. This complex controls 36,000 square miles of Special Use Airspace over the Pacific Ocean providing the Navy with a realistic operational environment for the safe conduct of controlled air, surface and subsurface launched missile tests, aircraft tests and fleet exercises involving aircraft, surface ships and various targets. Also known as the Point Mugu Sea Range, this area includes the northern Channel Islands and San Nicolas Island. The Navy owns both San Nicolas and San Miguel islands and leases property on Santa Cruz Island. However, San Miguel Island is jointly managed by the Navy and the CINP. The Navy has provided important support for various Sanctuary research efforts (ships, submarines, remotely operated vehicles, etc.).

The U.S. Air Force

The U.S. Air Force in the region is based at Vandenberg Air Force Base (VAFB). VAFB, located on approximately 98,000 acres in western Santa Barbara County, is headquarters for the U.S. Air Force 30th Space Wing. The Air Force's primary missions at VAFB are to launch and track satellites in space, test and evaluate America's intercontinental ballistic missile systems, and provide aircraft operations in the western range. The installation also supports aircraft and helicopter training and testing programs along the base's coastal area.

The Navy and the Air Force share one seat on the Advisory Council. These Advisory Council members formed a military activities working group providing invaluable support explaining Department of Defense related activities.

The U.S. Coast Guard (USCG or Coast Guard)

The USCG is a military, multi-mission maritime service that is also one of the nation's five Armed Forces. The Coast Guard's diverse missions include homeland security, search and rescue, law enforcement, marine safety, environmental protection, spill response, migrant interdiction, fisheries enforcement, drug interdiction, national defense, aids to navigation, and more. As the nation's primary maritime law enforcement agency, the Coast Guard has broad responsibility for enforcing all federal laws and regulations throughout the Sanctuary and assists NOAA in the enforcement of Sanctuary regulations. The USCG has one member and one alternate seat on the Advisory Council.

Figure 23. *U.S. Coast Guard vessel, Santa Barbara Channel (Laura Francis)*

The Minerals Management Service (MMS)

MMS is the bureau of the Department of the Interior regulating the nation's oil and natural gas resources in the outer continental shelf (OCS), as well as leases pertaining to these resources. Management responsibility for OCS lands offshore California, Hawaii, Oregon, and Washington resides with the MMS Pacific OCS Region located in Camarillo, California. The CINMS boundary extends into the federal OCS approximately three nmi.

MMS contributes significant funds and resources to marine research projects in the Channel Islands region. The Sanctuary sometimes uses MMS research results in support of Sanctuary management.

MMS is also responsible for ensuring safe practices among the various oil and gas entities operating within the Santa Barbara Channel. MMS has one member and one alternate seat on the Advisory Council.

The U.S. Fish and Wildlife Service (USFWS)
USFWS is housed within the Department of the Interior. USFWS works to conserve, protect, and enhance fish (freshwater species), wildlife, and plants and their habitats. USFWS shares responsibility with NOAA Fisheries for implementing the Marine Mammal Protection Act and the Endangered Species Act (USFWS is responsible for managing sea otters, walruses and brown pelicans; NOAA Fisheries is responsible for all other marine mammals).

The Environmental Protection Agency (EPA)
The EPA helps to protect Sanctuary water quality by performing such activities as regulating sewage outfalls (via National Pollutant Discharge Elimination System Permits) and ocean dumping (under Title I of the Marine Protection, Research, and Sanctuaries Act).

U.S. Geological Survey (USGS)
The USGS is a bureau within the Department of the Interior providing reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy and mineral resources; and enhance and protect our quality of life. The USGS has no regulatory or management mandate. Scientists within the USGS work within four disciplines: biology, geography, geology and water. Scientists at the USGS Channel Islands Field Station (part of the Biological Resource Division, Western Ecological Research Center) conduct research on the ecology and conservation biology of sensitive plants and animals at the Channel Islands and along California's coast. In addition to CINMS, the field station supports information needs of the National Park Service, U.S. Fish and Wildlife Service, Department of Defense, California Department of Fish and Game and other state and federal clients. In addition, the USGS Coastal and Marine Geology Program's Western Region conducts multidisciplinary scientific research in the coastal and offshore areas of California, as well as Oregon, Washington, Alaska, Hawaii, and other Pacific islands and waterways of the United States.

State of California

The CINMS coordinates with the State of California in implementing many of its programs as well as its regulations. The CINMS and the various state resource agencies work in partnership to protect the resources in the CINMS. The state's jurisdiction in the Sanctuary extends three nmi offshore from the mean high tide line.

Since the Sanctuary's designation, the NMSP has enjoyed a close partnership with the State of California in achieving effective resource protection for the marine waters surrounding the Channel Islands. With four national marine sanctuaries designated in California, the NMSP and State of California are strong partners in protecting California's exceptional natural and historical/cultural marine resources, providing effective cooperative enforcement of Sanctuary and state resource protection laws, conducting vital ocean research and monitoring, delivering state-of-the-art public education services, and planning together to sustain and protect California's coast and ocean. California has been a leader in ocean and coastal management and continues to lead important initiatives for improving the management of fisheries, introduced species, marine protected areas, water quality, historic resources, and coastal development.

In 2004 California Governor Arnold Schwarzenegger adopted *Protecting Our Ocean: California's Action Strategy* (CRA and Cal EPA 2004). This forward-looking plan of action for ocean and

coastal management in California places a focus on ecosystems and stewardship closely paralleling the NMSP mandate and corresponding CINMS goals, underscoring the opportunity for CINMS/ state collaboration on a wide array of issues. Many of the challenges highlighted in California's ocean action strategy have also been identified as priorities in this management plan and the FEIS. As CINMS and the NMSP work closely with the state to help achieve the goals of California's ocean action strategy, the Sanctuary will benefit from the partnership and make important progress on implementing the strategies contained in this management plan.

The California Resources Agency (Resources Agency)

The Resources Agency is a cabinet-level agency responsible for the conservation, enhancement, and management of California's natural and cultural resources. The Resources Agency oversees the activities of 19 state departments, boards, commissions and conservancies, including the Department of Fish and Game and the California Coastal Commission. The Resources Agency, and in particular the Ocean Resources Management Program, is an integral Sanctuary partner, working with CINMS to develop successful relationships with state entities and collaborating on several regional marine resource protection projects. In addition, Resources Agency staff have been instrumental in mutual efforts to integrate Sanctuary and state policies, and along with the California Environmental Protection Agency produced the state's ocean action strategy: *Protecting Our Ocean: California's Action Strategy* (CRA and Cal EPA 2004). While the Resources Agency does not implement specific prohibitions or regulations, individual entities under its oversight do. CINMS maintains close working partnerships with several of these entities, including:

- *The California Coastal Commission (CCC)* was established in 1976 by the California Coastal Act for the purpose of planning and regulating water uses consistent with the comprehensive set of specific policies for the protection of coastal resources and the management of orderly economic development throughout the coastal zone. Activities in state waters must comply with the policies established by the California Coastal Act. In addition, federal activities affecting any land or water use or natural resource of the coastal zone must be conducted in a manner which is consistent with these policies to the maximum extent practicable, and activities which require a federal license or permit must be conducted in a manner consistent with the enforceable policies. The CCC holds a seat on the Sanctuary Advisory Council and assists CINMS in developing water quality protection strategies.

- *The California Department of Fish and Game (CDFG)* and the Fish and Game Commission regulate and manage a wide variety of activities affecting the fish and game resources found on the land and in water areas under state jurisdiction. The CDFG is responsible for habitat protection and maintenance of California's marine resources. It is also responsible for management of fish and game stocks for commercial and recreational use. The CDFG retains jurisdiction of fisheries management in state waters, coordinates with NMFS, and represents the State of California as a member of the Pacific Fishery Management Council. Management of fisheries in the CINMS is administered by CDFG in state waters and NMFS in federal waters. The Pacific Fishery Management Council (PFMC) provides recommendations to NMFS regarding fishery management and fishing regulations. When issues arise that affect fisheries management, the CINMS coordinates with the respective agencies to identify the appropriate action for that agency to pursue. In the event the CINMS thinks regulations to restrict fishing are appropriate, it pursues a formal process with fishery management agencies, as described in Section 304(a)(5) of the NMSA (16 U.S.C. 1434 (a)(5)). More commonly, the CINMS also coordinates with the CDFG on marine research activities, enforcement measures to protect marine resources (*e.g.*, enforcement of state marine reserves and state marine conservation areas

within the Channel Islands MPA network), protection of endangered species, protection of migratory birds, and coordination of oil spill response and contingency planning.

- *The California Fish and Game Commission* is involved in the management of California's fish and wildlife resources. Formed in 1870, the Commission is composed of up to five members who are appointed by the Governor and confirmed by the state Senate. The Commission meets to publicly discuss various proposed regulations, permits, licenses and management policies, including fisheries issues. In addition, the Commission has general regulatory powers for state fisheries management. For example, the Commission decides on levels and methods of take for commercial and sport fishing. Sanctuary staff regularly attend Commission meetings to offer testimony and scientific expertise to inform pending Commission decisions. In 2002, the Commission voted to establish a network of state marine protected areas within the Sanctuary.

- *The California State Lands Commission (CSLC)* manages and protects the sovereign lands of the state pursuant to section 6301 of the California Public Resources Code. These lands include the beds of California's naturally navigable rivers, lakes, and streams, as well as the state's tide and submerged lands along California's more than 1,100 miles of coastline, extending from the mean high tide line out to three nmi offshore. The CSLC's policies for the management of the state's lands and natural resources are based upon the highest standards of environmental protection, financial responsibility and the Public Trust Doctrine, which imposes a duty to preserve the public's lands for the use and enjoyment of future generations. The CSLC was created by the California Legislature as an independent body, composed of three members- the Lieutenant Governor and State Controller, both statewide elected officials, and the Director of the Department of Finance, a cabinet level officer appointed by the Governor. The CINMS coordinates with the CSLC on projects altering the seabed such as the protection of submerged cultural resources. With regard to public trust lands, the CSLC has adopted regulations for the protection and use of public trust lands in the coastal zone. Administration of state lands includes leasing of these lands for various legislatively authorized purposes, regulation of ballast waster under the Marine Invasive Species Act, and protection of state property held in the public trust such as submerged shipwrecks. The CSLC also regulates activities pursuant to leases for oil and gas development to ensure they proceed safely and marine resources are adequately protected. In some cases, the jurisdiction of CINMS regulations may overlap those of the CSLC and while ownership of the lands out to three nmi lies with the State of California, management and permitting issues are coordinated between the two agencies.

- *The California Historical Resources Commission (HRC)* is the state agency responsible for the preservation of representative and unique archaeological, paleontological, and historical sites in the land and water areas of the state.

The California Environmental Protection Agency (Cal/EPA)

Cal/EPA works to restore, protect, and enhance the environment, to ensure public health, environmental quality, and economic vitality. The Sanctuary works with two boards overseen by Cal/EPA:

- *The State Water Resource Control Board (SWRCB)* and the nine Regional Water Quality Control Boards (Regional Boards) have primary authority for regulating water quality in California. The authority to administer National Pollutant Discharge Elimination System (NPDES) permits has been delegated by EPA to the SWRCB and by the state to the Regional Boards. The SWRCB is the regional lead in water quality management and assists CINMS in developing water quality protection strategies. SWRCB is also the statewide lead in assessing water pollution from large vessels. Two regional boards share jurisdiction over the Channel Islands and within the

Sanctuary. Water quality on and around San Miguel, Santa Rosa, and Santa Cruz islands is under the jurisdiction of the Central Coast Regional Board. Water quality on and around Santa Barbara and Anacapa islands is under the jurisdiction of the Los Angeles Regional Board.

- *The California Air Resources Board (ARB)* is charged with the maintenance and enhancement of the ambient air quality of the state. The ARB has set air quality standards designed to meet National Ambient Air Quality Standards and delegated their implementation to local Air Pollution Control Districts. The ARB consults with CINMS on vessel traffic issues in the Santa Barbara Channel.

Local Government Agencies

The County of Santa Barbara
The County of Santa Barbara regulates land uses within its boundaries, excluding incorporated cities, state operated universities, and federal lands. In the Channel Islands Santa Barbara County has land use authority from the mean high tide line landward on Santa Cruz and Santa Rosa islands. Santa Barbara County provides expertise on oil and gas development and is an active participant on the Advisory Council.

The County of Ventura
The County of Ventura regulates land uses within its boundaries, excluding incorporated cities, state operated universities, and federal lands. In the Channel Islands Ventura County has land use authority from the mean high tide line landward on Anacapa Island. The County has been instrumental in assisting Sanctuary education and outreach programs in the Ventura region, provided the Sanctuary's first office space in Channel Islands Harbor, and is an active member of the Advisory Council.

Coastal Municipalities
Coastal cities including, Oxnard, Ventura, Carpinteria, and Santa Barbara represent important existing and potential Sanctuary partners. For example, the Santa Barbara Waterfront Department leases office space and vessel slips to the Sanctuary while Oxnard, Ventura and Carpinteria are frequent hosts of Sanctuary events.

Tools For Formalizing Relationships
The CINMS superintendent uses various management tools to formalize interactions with other federal, state, and local agencies or the private sector including:

- *Memoranda of Understanding and Memoranda of Agreement* formalize in writing relationships between the Sanctuary and other entities for a specific purpose or project;
- *Interagency Agreements* are used to share expertise, equipment and/or personnel;
- *Grants/Cooperative Agreements* are financial assistance tools used to provide or receive certain funding for projects and/or products benefitting the public;
- *Contracts* are used to procure goods and services for the benefit of the Sanctuary;
- *Joint Project Agreements* are used for sharing costs equitably among participating entities in a joint project; and
- *Consultation* is communication between agencies, which occurs when one agency's activity may affect the resources of another.

Sanctuary Funding

Appropriations

Funding for the NMSP is derived primarily from federal appropriations and broken into two principal categories: funds for base budget and funds for capital facilities. The NMSP distributes its base budget funds to individual sanctuaries for site-specific core operations (labor costs for existing staff and other administrative expenses) and programmatic costs (the additional costs the Sanctuary incurs carrying out management strategies such as costs for printing, training, and additional contract labor, etc.). Capital facility funds supplement the site's base budget to cover costs of such things as exhibits, Sanctuary interactive kiosks, and visitor centers. Each action plan includes a table identifying costs for the individual strategies over the next five years (from the date of publication of this document). The tables provide a rough estimate of the programmatic costs needed to implement each of the strategies.

Additional Sources of Support

In addition to federal appropriations, CINMS leverages its abilities through partnerships, appropriate outside funding sources, and in kind services to assist in the implementation of the management plan.

The National Marine Sanctuary Foundation (NMSF)

The NMSF provides opportunities for the national marine sanctuaries through public and private sector partnerships. The NMSF continues to develop external funding opportunities for the NMSP's outreach and education programs and other resource protection efforts.

The Channel Islands Marine Sanctuary Foundation

The Channel Islands Marine Sanctuary Foundation was established in 1997 to increase the visibility and accessibility of CINMS. The Foundation Board is local and citizen-based, and works to raise funds and build stewardship for the Sanctuary. The Foundation has secured funding for specific Sanctuary projects, programs and products.

Federal, State, Regional and Local Agencies

Federal, state, regional, and local agencies participate in ongoing resource protection, management, monitoring, enforcement and permit programs carrying out Sanctuary objectives. Intra- and interagency relationships are formalized and common goals and objectives are identified. CINMS pursues opportunities to share staff, expertise and financial resources, as appropriate.

Nonprofit Organizations and Foundations

Nonprofit organizations and foundations have joined CINMS in numerous cooperative projects. For example, the Santa Barbara Museum of Natural History, the Ty Warner Sea Center, the General Services Foundation, and The Ocean Conservancy have all made a contribution of staff and/or financial resources in support of Sanctuary purposes.

Enforcement and Permitting

Figure 24. *NOAA aircraft on patrol in the Sanctuary (Ed Cassano)*

Enforcement

Sanctuary resource protection depends in part upon enforcement of Sanctuary regulations and other applicable state and federal statutes and regulations.[22] The Sanctuary's approach to enforcement focuses on two specific components: 1) the use of interpretive enforcement[23] as a means to inform the public and encourage voluntary compliance, and 2) the legal enforcement of regulations.

Sanctuary regulations are enforced through the NOAA Office for Law Enforcement (OLE), United States Coast Guard (USCG), and interagency agreements, which allow NOAA to deputize enforcement officers from other federal and state agencies. The Sanctuary has individual enforcement agreements with USCG, CDFG, and the NPS. For example, enforcement officers from CINP are authorized to enforce CINMS regulations. CINMS continues to develop and update formal agreements among enforcement agencies (see Strategy EE.2 - Expanding Enforcement Efforts) for purposes such as ensuring effective enforcement of MPA network regulations.

Permitting

Permits are required in all sanctuaries for conducting activities otherwise prohibited by sanctuary regulations (CINMS regulations are discussed in the FEIS (Vol. II, Section 2.0) and are available at 15 CFR 922.70-922.74). Per Sanctuary regulations, the Director of the NMSP may issue a permit to conduct an activity in the Sanctuary otherwise prohibited by CINMS regulations provided the activity meets a set of criteria (15 CFR 922.74). The decision on whether or not to issue a permit is typically made by the sanctuary superintendent.

Specific permitting regulations vary from sanctuary to sanctuary. In general, many national marine sanctuaries may issue permits for such activities as research, education, and salvage. Some sanctuaries also have the authority to issue permits for activities that would further sanctuary management purposes, but that would not fall into any other existing permit category.

The permit application process requires the submittal of a project summary, including the exact location of activities, description of methods, rationale for use of the Sanctuary environment, explanation of environmental consequences, and plan for reporting results to the Sanctuary. Per CINMS regulations, the Director of the NMSP may issue a permit if they make certain findings, which address matters such as: the professional and financial responsibility of the applicant; the appropriateness of the methods envisioned to the purpose(s) of the activity; the extent to which the conduct of any permitted activity may diminish or enhance the value of the Sanctuary as a source of recreation, or as a source of educational or scientific information; the end value of the activity; and such other matters as may be deemed appropriate (15 CFR 922.74). CINMS permit program activities are discussed further in the Operations Action Plan.

[22] For more information on enforcement under the NMSA, see sec. 307 of the NMSA at: http://www.sanctuaries.nos.noaa.gov/natprogram/nplegislation/nplegislation.html.

[23] Interpretive enforcement is an enforcement strategy in which voluntary compliance and stewardship are stressed through educational messages and literature on responsible behavior. Many state and federal resource management agencies across the United States now utilize this strategy.